AMENDMENTS TO THE SPECIFICATION

Please substitute the following replacement paragraph(s) for the previously-pending versions of such paragraph(s). The replacement paragraph(s) are marked-up to show changes from the previously-pending versions thereof. Please substitute the following new drawing sheet as indicated.

** Replace the paragraph at page 13, line 29 through page 14, line 8 with the following replacement paragraph:

FIG. 16A through FIG. 16E show various configurations for arrays of adsorbent materials. Figures 16A and 16B show, respectively, a top plan view of a substantially planar wafer substrate for an array of 256 adsorbent materials (Fig. 16A), and a partial-cross-sectional side view of an individual well formed in one surface of the wafer substrate (Fig. 16B) into which the adsorbent materials can be deposited. Figure 16C is a top plan view of an array of substantially parallel thin-layer chromatography (TLC) channels comprising adsorbent material and being adapted for fluid communication with distribution systems for a mobile-phase eluant. Figure 16C-1 shows a detailed, enlarged top plan view of a selected portion of the array of parallel thin-layer chromatography channels of Figure 16C, taken at the circular region thereof designated "A". Figure 16D shows a top plan view of a substantially planar wafer substrate for an array of 128 microreactors with an effluent distribution manifold that allows for adsorption of effluent components onto adsorbent material provided in microseparators (900) arranged in a row near the periphery of the wafer. Figure 16E shows a top plan view of a substantially planar wafer having an array of microseparators arranged in a row to correspond with an row of aperatures (519 of Fig. 16D), and in fluid communication therewith.

** Replace the paragraph at page 86, line 15 through page 88, line 6 with the following replacement paragraph:

Figures 16C, 16C-1 and 16D show arrays of adsorbent materials that can be employed in detection schemes involving thin-layer chromatography (TLC) techniques to determine the presence, absence or relative or absolute quantity of a particular reaction

product of interest. Figure 16C, ~~including~~ and corresponding detail shown in Figure 16C-1 (taken at "A" of Figure 16C), shows an array comprising a plurality of substantially parallel TLC channels, each of the plurality of TLC channels 740 having one or more mobile-phase inlet ports 742 and one or more mobile-phase outlet ports 743 in fluid communication with each other (via the TLC channel 740). The TLC channels 740, and mobile-phase inlet and outlet ports 742, 743 can be formed in a substrate 710 using microfluidic manufacturing techniques generally known in the art, such as those discussed above in connection with fabrication of the microreactors, microseparators and fluid distribution systems. The TLC channels 740 contain an adsorbent material 720 that is substantially selective for one or more analytes (*e.g.*, reaction products or unreacted reactant) of interest. The TLC channels 740 are arranged such that a portion of the adsorbent-material-containing TLC channel 740, referred to herein as the adsorption spot 744, can be in fluid communication with a microseparator 900 of the invention (as described above). The adsorption spot 744 can, in some embodiments, form a portion of a surface that defines the separation cavity (*e.g.*, by having microseparator cavities arranged to correspond to the arrangement of adsorption spots 744 as shown in Fig. 16C and Fig. 16C-1). In preferred embodiments, the adsorption spot 744 is preferably located in a portion of the TLC channel 740 that is closer to the mobile-phase inlet port 742 of the TLC channel 740 than to the mobile-phase outlet port 743 thereof. In general, however, the length of TLC channel between the adsorption spot 744 and the mobile-phase outlet port 743 is preferably sufficient to obtain meaningful TLC data upon subsequent elution of the adsorbed analyte of interest. In operation, with reference to Figure 16C, Figure 16C-1 and Figure 18A, an analyte in the reactor effluent stream 40 can be selectively adsorbed and deposited onto the adsorbent material 720 at the adsorption spot 744 in the TLC channel 740, with the separated reactor effluent 60 passing through the discharge manifold (501 of Figure 14) as described. Following the reaction, the TLC-array 700 can be removed from the microprocessing system 10 (as described), and then evaluated in a TLC detection system (not shown) comprising a mobile-phase source, a mobile-phase supply manifold (*e.g.*, substantially as shown and described in connection with Figures 7B or 7I), the TLC array 700, a mobile-phase discharge mannifold (*e.g.*, substantially as shown and described in connection with Figures 14), a mobile-phase sink, together with appropriate releasable

seals (*e.g.*, gaskets) between the manifolds and the TLC array 700. A TLC mobile phase (*e.g.*, eluant or solvent) can flow in each of the plurality of mobile-phase inlet ports 742, through each of the plurality of TLC channels 740, and out each of the plurality of mobile-phase outlet ports 743. After optional treatment with appropriate detection agents (*e.g.*, indicating agents) and detection thereof, the relative movement of the analyte of interest down the length of the TLC channel 740 can be correlated to known standards (included, for example, in the microreaction / microseparation system during the reaction of interest) for determination, and ultimately, for evaluation of the candidate materials (or processing conditions, *etc.*). In another embodiment, shown in Figure 16D, the microreactor effluent is discharged from microreactors 600 through a discharge mannifold 501 (*e.g.*, having flow resistance characteristics substantially as described in connection with Figure 14), and is contacted with an array of adsorbent-material containing microseparators 900 arranged in one or more rows near the peripheral edge of the substrate. The microseparators can be on the same substrate as the microreactors 600, or alternatively, as shown in Figure 16E, on a different substrate, but in fluid communication with the discharge flowpaths (*e.g.*, through a row of apertures 519 and connecting channel 550 (not shown)). In either case, the microseparators can also be TLC channels 740 (with the adsorbent material situated therein) located along an external edge of the TLC array 700. An analyte can be selectively adsorbed onto the adsorbent material 720 in the microseparators 900. The TLC-array 700 can be subsequently removed from the microprocessing system 10 (as described), and then evaluated in a TLC detection system (not shown) comprising a solvent with which the analyte-containing edge of the adsorbent array 700 is contacted, and eluted therefrom (substantially as known in the art). After optional treatment with appropriate detection agents (*e.g.*, indicating agents) and detection thereof, the relative movement of the analyte of interest can be correlated to known standards, as discussed above.

** Replace drawing sheet 26/46 (showing original Figure 16C) of the formal drawings submitted to the Office on April 26, 2004 (indicated as being received at the Office on April 29, 2004) with the attached replacement sheet 26/46 (showing corrected Figure 16C and Figure 16C-1).